Phytochemistry, Vol. 21, No. 6, p. 1473, 1982.
Pergamon Press Ltd. Printed in Great Britain.

BOOK REVIEW

Hormonal Regulation of Development I: edited by J. MACMILLAN, Vol. 9, Encyclopedia of Plant Physiology New Series, Springer, Berlin, 1980. 681 pp. DM 228.

The New Series of the Springer *Encyclopedia of Plant Physiology* moves on its majestic way and enters with Volume 9 the controversial shoals and quicksands of hormonology. No less than three volumes are to be devoted to this subject. The first one, under review, is an account of the recent biochemistry and chemistry of plant hormones and in this respect the present editor Professor Jake MacMillan has a more straightforward task than the editors of subsequent volumes. The main problem here is competition with other recent treatises, which have also provided comprehensive reviews of the hormone literature of the last decade or so. Some delay in publication has not helped matters, although the editor has in his introduction himself updated the main review chapters (which finish at 1978) with some key references to the 1979 and 1980 literature.

The general plan of the volume is to provide a unified account of all five major classes of hormone, so that we have separate chapters on their chemistry and distribution (J. R. Bearder), purification and identification (T. Yokota and coauthors), quantitative analysis (D. R. Reeve and A. Crozier), and biosynthesis and metabolism (G. Sembdner and coauthors). The last two chapters then deal with molecular aspects of hormone action (J. L. Stoddart and M. A. Venis) and the effects of exogenous hormone treatments (M. Zeroni and M. A. Hall).

The first chapter provides valuable listings of all known hormone structures within each class, together with the names of those plants where unequivocal identifications have confirmed their presence. The value of the second half of this chapter is more suspect, since it lists the many and various other plant substances which can affect plant growth. The problem is really one of definition and while some structures do produce effects at very low 'physiological' concentrations, most are only active at relatively high levels. With the current concept that secondary substances are multifunctional when loosed into the environment, one suspects that almost every secondary compound could be shown to exert inimical effects on the growth of other plants, particularly those which lack it. It would seem sensible, therefore, to restrict the term growth or germination inhibitor to those substances which still produce a growth effect at concentrations of or below 10^{-4} M. Unfortunately, in this chapter, little information is provided on the levels of inhibitory or other activity.

The central chapters of the book require little comment, except to say that they appear to be fully comprehensive and highly informative. Many details of hormone separations are provided, with tables of R_f data, retention times, spectral behaviour, colour reactions and so on. The last two chapters deal with the more speculative area of structure–activity relationships. With regard to plant hormone receptor sites, Stoddart and Venis are forced to conclude that no single such system has yet been described which satisfies the minimal criteria for binding a hormone. The final chapter on exogenous hormone applications mainly discusses the well-known effects of auxin on cell walls.

In summary, this volume will be of value to anyone requiring an up-to-date overview of plant hormones, who has not already invested in one of the competitive texts. It is impeccably edited, extensively indexed and beautifully produced and is a worthy addition to the New Series.

JEFFREY B. HARBORNE

Plant Science Laboratories,
University of Reading